



Public Service Announcement

## Safe Home Heating

Provided by your

Local Emergency Management Office



### Safe Home Heating: Avoiding Carbon Monoxide Hazards

It's so easy ... so automatic ... that people just don't think about it. Every year, when the weather turns cold, homeowners' reach for household thermostats, flip a switch to turn on the heat and set the temperature to 68 or 70 degrees. Little thought is given to whether the furnace exhaust system – the chimney and connector pipe – is ready to provide safe, effective service. Consumer confidence in the convenience and safety of today's home heating systems is usually well-placed. The oil and gas heating industries have achieved impressive safety records. Nonetheless, over 200 people across the nation are known to die each year from carbon monoxide poisoning caused by problems in the venting – out of their homes – of toxic gases produced by their heating systems. This is according to statistics compiled by the U.S. Consumer Product Safety Commission. Other agencies estimate actual numbers at between 2,000 and 4,000. In addition, around 10,000 cases of carbon monoxide-related "injuries" are diagnosed each year. Because the symptoms of prolonged, low-level carbon monoxide poisoning "mimic" the symptoms of common winter ailments (headaches, nausea, dizziness, fatigue, and even seasonal depression), many cases are not detected until permanent, subtle damage to the brain, heart and other organs and tissues has occurred. The difficulty of diagnosis also means the numbers of people affected may be even higher. Fortunately, regular chimney system inspection and maintenance can prevent poisoning incidents like these.

### What Carbon Monoxide Does to You

Too much carbon monoxide in your blood will kill you. Most of us know to try to avoid this. Less well known is the fact that low-level exposure to this gas also endangers your health. One of the truths of our human bodies is that, given a choice between carbon monoxide and oxygen, the protein hemoglobin in our blood will always latch on to carbon monoxide and ignore the life-giving oxygen. Because of this natural chemical affinity, our bodies – in effect – replace oxygen with carbon monoxide in our bloodstream, causing greater or lesser levels of cell suffocation depending on the intensity and duration of exposure.

The side-effects that can result from this low-level exposure include permanent organ and brain damage. Infants and the elderly are more susceptible than healthy adults, as are those with anemia or heart disease. The symptoms of low-level carbon monoxide poisoning are so easily mistaken for those of the common cold, flu or exhaustion, that proper diagnosis can be delayed. Because of this, be sure to see your physician about persistent, flu-like symptoms, chronic fatigue or generalized depression. If blood levels of carbon monoxide are found to be high, treatment is important. Meanwhile, it makes

good sense to put heating system inspection and maintenance on your annual get-ready-for winter list. Prevention is the best cure.

### **Causes of Heating System Problems**

Why is poisoning from carbon monoxide on the rise? And why does it stem primarily from home heating systems that – at first glance – seem the same as those that have been used safely for years?

- Today's houses are more air-tight. Homeowners are aware of the cost of heating drafty homes and have taken steps to seal up windows, doors and other areas of air infiltration. Consequently, there is less fresh air coming into a home and not as many pathways for stale or polluted air to leave it. And, when furnaces and boilers are starved of the oxygen needed to burn fuels completely, carbon monoxide is produced.
- Manufacturers have designed new, high-technology heating appliances whose greater efficiency helps us save money, conserve natural resources and decrease environmental pollution. However, the new breed of high-efficiency gas and oil furnaces – when hooked up to existing chimney flues – often does not perform at an optimum level. The differences in performance create conditions that allow toxic gases to more easily enter home living spaces.
- The above conditions point out a number of older, ongoing problems that still require detection and correction in order to prevent toxic gases from filtering into the house. These include damaged or deteriorating flue liners, soot build-up, debris clogging the passageway, and animal or bird nests obstructing chimney flues.

### **Caring for Your Chimneys & Flues**

When gas and oil burn in vented heating systems – in order to produce household heat – the dangerous fumes that are by-products of combustion range from soot (particulate matter) to nitrogen dioxide (also toxic) to acidic water vapors formed when moisture condenses. None of these pollutants should be allowed to leak from the chimney into your living space. In addition to carrying off toxic gases, chimneys also create the draft (flow of air) that provides the proper air and fuel mixture for efficient operation of the heating appliance – whether a furnace or boiler. Unfortunately, many chimneys in daily use in homes throughout the country either are improperly sized or have conditions that make them unable to perform their intended function.

### **Chimney Problems to Avoid**

Oil and gas furnaces have distinct burning characteristics and produce different combustion by-products. However, the chimneys and connector pipes that serve them share common problems. Both systems are subject to weathering, animal invasions, deterioration and rust-out and the accumulation of nest materials and debris. Both require regular care and maintenance.

**Oil:**

Oil flues need to be cleaned and inspected annually because deposits of soot may build up on the interior wall of the chimney liner. The amount of soot depends on how well-tuned the furnace is and whether the house provides sufficient air for combustion. Excessive soot causes problems that range from chimney fires ... to flue deterioration ... to chimney blockages that direct toxic fumes back into the house and cause inefficient furnace operation.

**Gas:**

Natural gas is a clean-burning fuel, but today's high-efficiency gas furnaces pose a special problem. The fumes they produce are cooler and contain high levels of water vapor, which are more likely to cause condensation than older models. Since these vapors also contain chlorides picked up from house-supplied combustion air, the flues are subjected to more corrosive conditions than before. Even worse, many gas appliances today use chimneys that once served oil furnaces. If the liners of these chimneys are made of terra cotta (fired clay commonly used in chimney construction), bits and pieces of them slowly flake off under corrosive conditions. The combination of water-laden gas vapors available to mix with old oil soot deposits speeds this process, and debris that can block the chimney builds up at the bottom of the flue. To the extent that problems with either of these heating systems interfere with the flow of toxic gases and particles out of the house, they may also force carbon monoxide, fumes and possibly soot into the living spaces of your home. They may cause a one-time, high-level exposure situation or release smaller amounts more regularly over a longer period. These problems should never be ignored.

**Preventing Problems**

In the United States, numerous agencies and organizations now recognize the importance of annual heating system inspection and maintenance in preventing carbon monoxide poisoning. The U.S. Consumer Product Safety Commission, the U.S. Environmental Protection Agency, the National Fire Protection Association, and the American Lung Association – are some of the organizations that now encourage the regular maintenance of home heating systems and their chimneys in order to keep "the silent killer" at bay. An overlooked heating system can produce death and heartbreak. Considering the risks involved when gas or oil systems are neglected - and the benefits that accrue when they are properly maintained - you would do well to have your chimneys checked annually by a CSIA Certified Chimney Sweep® ... and cleaned or repaired as needed. This can keep illness or death from carbon monoxide poisoning from claiming you or those you love.